## CLAIMS

1. A $Y_2O_3$ spray-coated member characterized by covering a surface of a substrate with a $Y_2O_3$ black spray coating.

2. A $Y_2O_3$ spray-coated member according to claim 1, wherein an undercoat made of a metal coating is disposed beneath a $Y_2O_3$ black spray coating.

3. A $Y_2O_3$ spray-coated member according to claim 2, wherein a middle layer is disposed between an undercoat made of a metal coating and a $Y_2O_3$ black spray coating as a top coat.

4. A $Y_2O_3$ spray-coated member according to claim 2 or 3, wherein the undercoat is a metal coating made of at least one metal or alloy selected from Ni and its alloy, W and its alloy, Mo and its alloy, Ti and its alloy, Al and its alloy, and Mg alloy at a thickness of 50-500 μm.

5. A $Y_2O_3$ spray-coated member according to claim 3, wherein the middle layer is made of a coating of $Al_2O_3$, a double oxide of $Al_2O_3$ and $Y_2O_3$, a solid solution or a mixture thereof.

6. A $Y_2O_3$ spray-coated member according to any one of claims 1 to 3, wherein the $Y_2O_3$ black spray coating is obtained by forming a $Y_2O_3$ re-molten layer having a thickness of less than 30 μm and a blackened $Y_2O_3$ layer on a surface of the $Y_2O_3$ spray coating.

7. A $Y_2O_3$ spray-coated member according to any one of claims 1 to 3, wherein the $Y_2O_3$ black spray coating is constituted with a layer in which $Y_2O_3$ particles blackened on an outer peripheral portion or an inside of $Y_2O_3$ particle constituting the spray coating are deposited to a thickness of about 50-2000 μm.

8. A method of producing a $Y_2O_3$ spray-coated member, characterized in that a white $Y_2O_3$ powdery material is plasma-sprayed directly on a surface of a substrate or on an undercoat applied onto the surface of the substrate in an inert gas atmosphere substantially containing no oxygen to form a $Y_2O_3$ black spray coating.

9. A method of producing a $Y_2O_3$ spray-coating member, characterized in that a white $Y_2O_3$ powdery material is sprayed on a surface of a substrate to form a $Y_2O_3$ white spray coating and then a laser beam is irradiated to form a

blackened $Y_2O_3$ layer on a surface of the $Y_2O_3$ white spray coating.

10. A method of producing a $Y_2O_3$ spray-coated member, characterized in that a white $Y_2O_3$ powdery material is sprayed directly on a surface of a substrate or on an undercoat applied onto the surface of the substrate to form a $Y_2O_3$ white spray coating, and then an electron beam is irradiated under a low pressure or in an inert gas atmosphere under a low pressure to form a blackened $Y_2O_3$ layer on the surface of the $Y_2O_3$ white spray coating.

11. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, 9 or 10, wherein the undercoat made of a metal coating is disposed beneath the $Y_2O_3$ black spray coating.

12. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, 9 or 10, wherein a middle layer is disposed between the undercoat made of a metal coating and the $Y_2O_3$ black spray coating formed as a top coat.

13. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, wherein the inert gas atmosphere is an atmosphere under a low pressure of 50-600 hPa.

14. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, wherein the inert gas atmosphere includes an environment of a heat source for an atmosphere plasma spraying surrounded with a gas such as Ar, $N_2$ or the like so as not to penetrate air into the heat source.

15. A method of producing a $Y_2O_3$ spray-coated member according to claim 12, wherein the middle layer is made of a coating of $Al_2O_3$, a double oxide of $Al_2O_3$ and $Y_2O_3$, a solid solution or a mixture thereof.

16. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, 9 or 10, wherein the $Y_2O_3$ black spray coating is obtained by forming a $Y_2O_3$ re-molten layer having a thickness of less than 30 μm and a blackened $Y_2O_3$ layer on a surface of the $Y_2O_3$ spray coating.

17. A method of producing a $Y_2O_3$ spray-coated member according to claim 8, 9 or 10, wherein the $Y_2O_3$ black spray coating is constituted with a layer in which $Y_2O_3$ particles blackened on an outer peripheral portion or an inside of $Y_2O_3$ particle constituting the spray coating

are deposited to a thickness of about 50-2000 μm.